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Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 17, Number 1

Fall 1997

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street

Bloomington, MN 55425-1600 612-335-2323

6:30-7:00 PM—Refreshments, Room A
7:00-8:30 PM—Program & Society Business
8:30 PM—Socializing
9:30 PM—Doors close sharply at 9:30 PM

Programs

October 2, 1997

Protecting Minnesota Prairies and Forests—Conserving our Native Lands.—Lisa Mueller (Nature Conservancy)

November 6, 1997

Planting the Native Species—Cooperating Communities.—Cynthia Lane (Greening The Great River Park)

December 4, 1997

Using Native Plants for Shoreline Protection: Emergent and Aquatic Plants to Reduce Erosion and Runoff, Buffer Zones as Nutrient Filters.—Mike Halvorson (DNR)

January 1998 (NO MEETING)

February-June, 1998

- *Native Plants in Minnesota*—Vera Wong
- *Mound Prairie Scenic and Natural Areas*—Ken Kailing
- *Minnesota Nature Photography Show*
- *Lichens, Mosses, Ferns—Indicator Species*—Eville Gorham

MNPS Web Site:

<http://www.stolaf.edu/depts/biology/mnps>

MNPS board looks ahead to 1997-1998

On Sunday, September 7, 1997, the MNPS board met for its annual fall meeting. The first item of business was the appointment of Bill Capman as vice president and Jackie Buffalow as secretary. Thanks were extended to both for being willing to serve in these positions and a special thanks to Chris Drassal for her past work as secretary.

The status of the program of speakers for this coming year was reviewed. Plans for certain months are still being firmed up, and it looks like we are going to have an exciting and diverse mix of topics. Planning is underway for the Spring Symposium which will focus on the paleobotany and geology of Minnesota, and possible dates are either April 18th or April 25th, 1998.

We spent considerable time discussing the location of current meetings. Board members were pleased with the location and facilities at the Minnesota Valley National Wildlife Refuge but concerns were raised about (a) increasing costs (\$450/yr) and (b) limited size. If the cost to use the facilities rises too much more or attendance at meetings increases very much, we may need to move and alternative locations were named.

This year meetings will extend from 6:30 to 9:30 PM so there will be more time to chat with fellow members. We will be trying to increase communication among members by arranging for interest tables (for example, a prairie table or a forest table) where members can discuss problems/observations/questions with like-minded people. We may also be arranging for the "experts" around us to make themselves available at different meetings to help with plant identification or other questions. Contact John or Jackie Buffalow if you are interested in either of these ideas. We will also be making a survey of member backgrounds/interests later this year.—Charles Umbanhowar, President MNPS

Seed Collecting

It is that time of the year when many of us are collecting seeds of native prairie plants or scouting for our favorite patch of blazing star in anticipation of seeds to come. Much has been written about seeds as symbols of life and renewal, and it is the rare person who does not enjoy being out to collect them. Many books and articles have been written about how to collect, process and store native seeds—for example, Char Bezanson's article in the Fall, 1993 *Minnesota Plant Press* (also on WWW site)—but we also need to think about how much seed to collect (or not).

In a recent article in the *Iowa Prairie Network News** on seed collecting, Cindy Hildebrand weighed the pros and cons of seed collecting on Iowa prairie preserves. Because of increasing interest in planting farm fields to prairie as part of the Conservation Reserve Program, she is concerned about the introduction of non-Iowa ecotypes and the possibility of "genetic pollution" or imported disease and to this list could be added the possibility that these plantings fail or that certain aggressive cultivars invade native remnants; she sees the collecting of local seeds from local prairie remnants as being a way to avoid these problems.

In Minnesota, seed collecting is already forbidden (without a permit) on state or Nature Conservancy prairie remnants, but many of us collect seeds from plants growing in roadside or railroad remnants, and I suspect that a few of us succumb to the temptation to pick a few forbidden fruits (or seeds). Regardless of the source, we need to think about the biology and ethics of seed collection. Although it is true that many prairie plants reproduce vegetatively and that very few seeds ever germinate and grow to be mature plants, the fact is that for most species we don't know how important seeds are (or are not) to continued reproduction, nor do we know what insects may depend upon these seeds (or fruits). Trampling or direct damage to plants resulting from pulling seed heads may also cause damage. I can think of one site where the seeds from such popular species as compass plant and rattlesnake-master have been completely stripped and the vegetation surrounding these plants completely flattened.

To protect all of our prairie remnants, one possibility would be not to collect seeds but rather to buy plants and seeds from reputable suppliers of native prairie plants. Many of these suppliers are members in good standing with MNPS. Another possibility would be to sow half the seed you pick. One for you and one for the prairie, one for.... We would like to know how you decide: if to collect? where to collect? what to collect? and how much to collect? So write us and let us know what you think. We will compile all of the answers (and can arrange for anonymity, Bottle Gentian in Mankato!) and summarize/quote them in the next issue of the *Minnesota Plant Press*.—Charles Umbanhowar, St. Olaf College, Northfield, Minnesota

*IPN News is published by the Iowa Prairie Network, P.O. Box 516, Mason City, IA, 50402. Information is also available at <http://www.netins.net/showcase/bluestem/ipnapp.htm>.

Audio tapes. If you can't attend a meeting but would like to hear the presentation, you can purchase an audio tape of the meeting, starting with the one on March 6, 1997 (subject to permission by the speaker). Send a check for \$5 payable to the *Minnesota Native Plant Society* and a mailing label with your full name and address. Send check and meeting date selection to Dave Crawford, 4051 Gisella Blvd., White Bear Lake, MN 55110.

The Minnesota Native Plant Society

Minnesota Plant Press

Thor Kommedahl, editor

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Membership dues are \$12 per year for regular members and includes subscription to the newsletter; dues for students and seniors are \$10, for family \$14, for institutions \$20, and donors \$25. Checks can be made out to: Minnesota Native Plant Society, and sent to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

MNPS Board of Directors

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507-645-4386; ceumb@stolaf.edu

Vice-President: Bill Capman, Department of Biology, Augsburg College, 2211 Riverside Ave., Minneapolis, MN 55454. (612) 330-1072; capman@augsborg.edu

Treasurer: Pat Ryan, 9016 Kimbro Ave. South, Cottage Grove, MN 55016; 612-459-8554.

Secretary: Jackie Buffalow, PO Box 662, Mendota, MN 55150-0662. (612) 423-2011. jbuffalow@gnb.com

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The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

Help needed for treats!

The MNPS Board thanks all who volunteered and brought refreshments to meetings in 1996-1997—a contribution much appreciated!

Again, we are requesting members to sign up to bring refreshments (finger food and one or more beverages—coffee is supplied by the MNWRCenter). If you would like to be a “breaker of the ice” by becoming the first “treat bringer of the year” for the October meeting, please call Dave Crawford at 612-653-4385. Thank you.—*Dave Crawford*

Guide to Spring Wildflower Areas

This MNPS guide prepared by Marilyn and J.B. Andersen, Jim Schuster, and John Moriarty has been updated, redesigned, and reprinted as the 1996 edition, and covers the Twin City natural areas. Vera Ming Wong prepared new illustrations. Purchase copies at regular meetings of the MNPS for \$3 each. To receive a copy by mail order, send \$6.50 (check or money order) to MNPS, c/o Char Bezanson, The School Nature Area Project, 1520 St. Olaf Avenue, Northfield, MN 55057. Make checks payable to MNPS.

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Request it from Don Knutson 612-721-6123 (work) or 612-379-7314 (home).

Car pooling — thanks, Grace

Grace Gray has resigned as car pool coordinator as she will be out of the state this winter. Please make your own arrangements for car pooling.

Prairie Moon Field trip attended by 25 persons

Members of the Prairie Moon Nursery co-op—Alan, Mary, and Bill—hosted a tour on June 14, 1997. This year's tour featured a woodland nursery area established with native flowers and ferns rescued or salvaged from MN DOT (with their permission). This cool glade inspired participants to discuss the ethics of transplanting any wild plant for personal or commercial gain. The landscape gardens near the office highlight the beauty of native plants and provide a great introduction or review of the flowers, grasses and shrubs native to the driftless bioregion.

Twelve people visited the Mound Prairie Scientific and Natural Area, and Ken Kailing led the group along a quarry road lined with bracken fern and paved with remnant blue and purple prairie clover plants. The climb over the quarry rubble enabled viewing a short grass prairie on a 60° slope, above the Root River. The heat of the late fall burn had removed all the thatch from the soil surface and the fragility of the soil on this slope was starkly evident. Many typical prairie plants were identified.—*Deb Anderson*

Fillmore County roadside survey starts this fall

A survey of the roadside vegetation of Fillmore County will start this fall and be completed by December 1998. Volunteers and paid drivers are being sought to survey 975 miles of roadsides. Volunteers are also needed to make a releve type survey of management practices along 3 miles of planted prairie roadsides. Training and workshops will be available to help any Minnesotans to set up roadside inventories in their township, town, or county. Please contact Deb Anderson if you would like to drive our scenic byways and help locate remnants of truly local genotype native plants.—*Prairie Smoke, Deb Anderson, RR #1, Box 152, Chatfield, MN 55923 (507-867-4692)*

Plant Lore

What is giant-hyssop?

One of the hyssops native to Minnesota is fragrant giant-hyssop, a perennial in the mint family. It is *Agastache foeniculum*.

What does it look like?

It grows 2 to 4 feet tall, with dense spikes of bright blue flowers attached to square stems. One sure way to identify it is to crush the leaves to get an anise or licorice odor. Also, it has 2 pairs of long, protruding stamens.

Where is it found?

It grows along dry, open or semi-shady places throughout the state.

How did it get its names?

The genus name is Greek for an ear of corn (wheat) because of the resemblance to wheat spikes. The specific epithet was chosen because the plant had the odor of fennel.

What about the name hyssop?

This is the Greek name for the plant also, but it is used for another mint species, *Hyssopus officinalis*, native of Eurasia but which has been naturalized in Minnesota.

Why is the name hyssop used for two different genera?

Well, they are both in the mint family, and both produce a distinctive odor. Moreover, tea is made from plants of both species. The tea from hyssop is made from flowers and used to treat respiratory ailments—it acts as a demulcent. A delicate anise-flavored tea is made from dried leaves of the fragrant giant-hyssop (*Agastache foeniculum*) to make a delicious beverage.

Is the scent of each species the same?

No, the odor of hyssop is powerful; in fact, elderly persons were known in Europe early on to press its flowers in psalm books to keep themselves awake during church services. Romans made herbal wine from it, and medieval monks spiced soups and sauces with it. The scent of giant-hyssop is milder.

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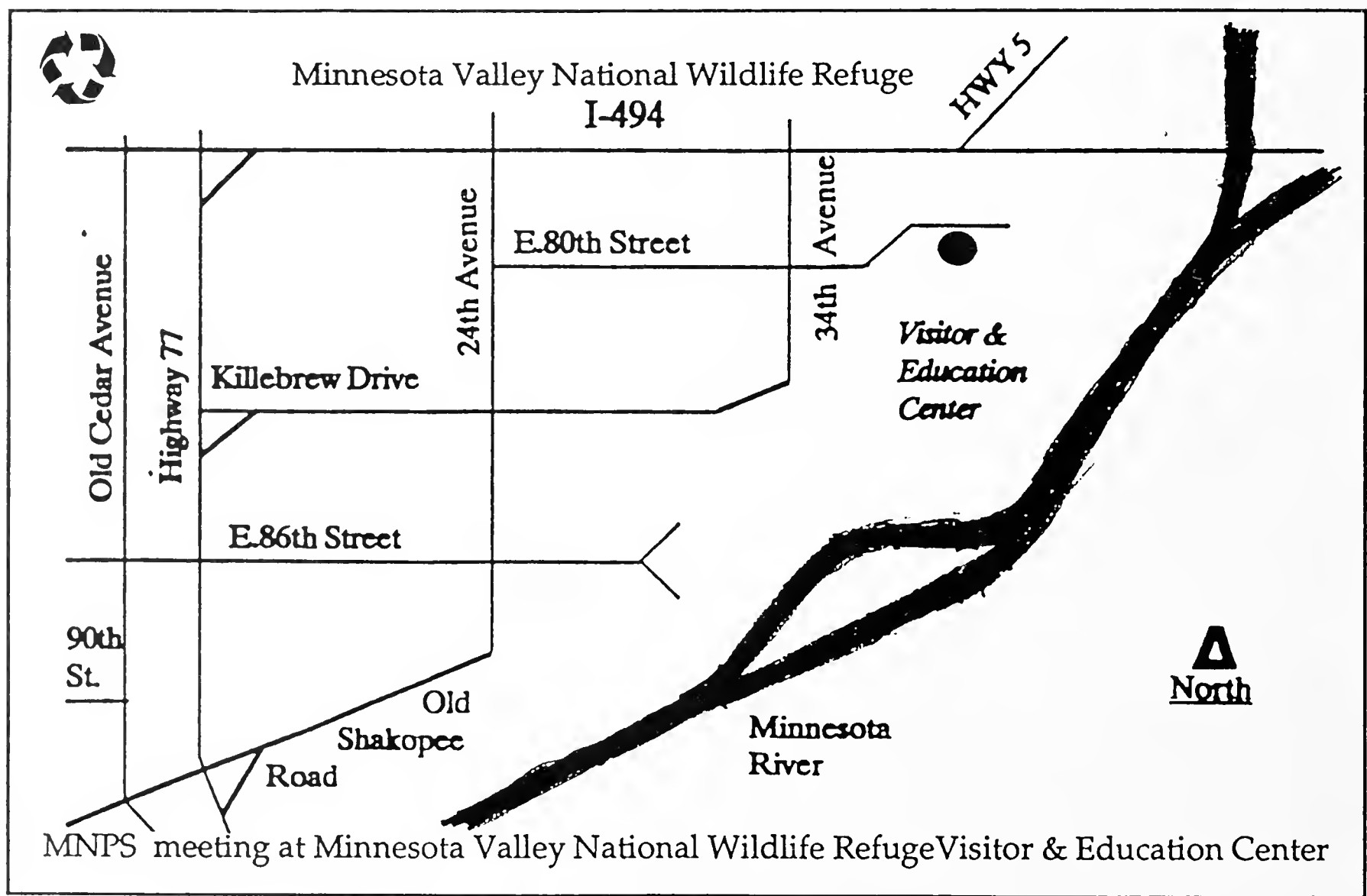
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Programs

February 5 *Leaflets: Mingling Art and Botany*, Vera Wong; POM: *Crataegus douglasi*, Welby Smith

March 5 Photo Club Presentation; annual meeting and election of board members.

April 2 *Mound Prairie Scenic and Natural Areas*, Ken Kailing; POM: *Solidago rigida*, Char Bezanson.

May 7 *Biology of Leedy's Roseroot*, Joel Olfelt (UM); POM: Boxelder, Margaret Rodina

June 4 *Perennial Prairie Forbs: Nongrasses in a Sea of Grass*, Clarence Turner; Plant Sale

June 6 MNPS Symposium (see page 4)

MNPS Web Site:

<http://www.stolaf.edu/depts/biology/mnps>

Deadline for spring issue is March 15, 1998

For winter weather emergency, contact Diane Hilscher, 612-714-9328 to find out if the center is open or not

Minnesota's Big Woods

Charles Umbanhowar

The Big Woods was a large deciduous forest located along the prairie-forest border in south-central Minnesota (see map). Big Woods comes from *Les Bois Franc* and was named by early French explorers, and the name was commonly used in the 19th century. The area was remarkably diverse in plant and animal life and the picture of a peninsula of forest surrounded by prairie has provided the basis for much scientific inquiry. Reconstruction of the history of this area has taught us a lot about the interactions between climate, fire and vegetation. The Big Woods exists today as only a few scattered preserves and parks or privately owned woodlots, and the conservation and restoration of these areas depend upon this information.

Multiple Definitions When anyone says Big Woods to me at least three things come to mind. The first is Laura Ingalls Wilder's story "Little House in the Bigwoods", but her story was set in Wisconsin in a valley up from the Mississippi River. The second is the Big Woods region (see map) which includes prairie, woodland and savanna, and forest and finally there is the Big Woods itself. While the first meaning is easy enough, the distinction between region and forest is a bit more difficult in part because understanding of the one is not complete without understanding of the other.

Big Woods area. The Big Woods Region stretches from St. Cloud south to Mankato and west from Northfield to west of the Minnesota River (map) and the exact positions of the boundaries are largely arbitrary. The region encompasses an area of approximately 6500 square miles. Our knowledge of the different types of plant communities within this area is based largely on information taken from the US Government Land Survey at the time of European settlement in the late 1850s. (continued on page 6, Big Woods)

Editorial

Prairie butterflies

Concerns have been expressed in recent years about the effects of burning and other management techniques on the populations of rare butterflies in prairies. A. B. and S. R. Swengel repeat these concerns in a recent paper (*J. Insect Conservation* 1:131-144, 1997).

Their purpose was to examine how the distributions of rare butterflies were correlated and which management factors had the greatest influence on the relative abundance of these butterflies. The authors surveyed more than 250 prairie or barrens sites, most of which were located in Wisconsin but they included sites in some other states such as Minnesota. Management factors included site size, fire, haying, mowing, grazing and none. While there were some statistical problems with their study (not all combinations of management factors were present for each species and they made so many tests that some of their significant results are likely due to chance) their findings should interest MNPS members who have butterfly gardens or who are helping to manage restored or native prairie.

The distribution and abundance of different rare butterflies varied depending upon the species. For example, the Dakota skipper (*Hesperia dacotae*) and Pawnee skipper (*Hesperia leonardus*) were positively correlated so that if the authors found the one species then the other was likely also to be present. These correlations, however, were weak and there were species pairs that either showed no correlation or negative correlation (i.e., if one was present the other was not). No one management technique affected butterflies the same: the Pawnee skipper was favored by haying while the dusted skipper (*Atryonopsis hianna*) was favored by wildfire but not by controlled burning. Size of prairie/grassland was weakly correlated with butterfly abundance. Clearly, prairies and barrens and other types of grasslands of Minnesota need to be actively managed. With the possible exception of very dry, thin-soiled prairies—like those present on the bluffs that tower above the Mississippi River—western red cedar (*Juniperus virginiana*) as well as other native and exotic trees and shrubs will quickly invade and eliminate many of the prairie plants that butterflies depend on.

On the other hand, frequent mowing or burning may also destroy the stems of plants that are hosting the larvae or eggs of some of these species and so may reduce population sizes (at least in the short term). As suggested by the work of the Swengels, the solution would seem to be to manage our prairies and grasslands with a mixture of management techniques applied at different times of the year and to only parts of a given prairie. This may mean burning only a third of a prairie at any one time, varying the number of years between burns, burning in the summer, fall, or spring, and combining burning with mowing or haying or grazing. We can not assume that one size (management technique) applied in a rigid fashion fits all; such variation is more likely to duplicate pre-European settlement conditions.—*Charles Umbanhowar*

Also read "Responses of prairie insects and other arthropods to prescription burns" by Catherine Reed, in *Natural Areas Journal* 17(4):380-385. 1997.

Board Candidates: Joel Dunnette and Andy Subrock.

Joel works at Mayo Foundation and is interested in prairie and savanna restoration and management, field trips, and is active in the Zumbro Valley Audubon Society. Andy is a restoration ecologist for Applied Ecology Native Landscape Restoration, and specializes in restoring prairies, wetlands, woodlands, and school plantings.

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Puccoons: Hoary or Hairy?

by Dave Crawford

Puccoons are among the showiest late-spring prairie wildflowers in Minnesota. The compact plants with their clusters of bright golden-yellow or orange-yellow blossoms always get my attention, even from a great distance. They may begin blooming by late April, and some continue blooming into July.

In eastern Minnesota, the two most common species are frustratingly easy to confuse. Of the two, hairy puccoon (also called *plains puccoon*, ed. note), *Lithospermum carolinense*, (which I much prefer to call "Carolina puccoon" to avoid confusion over the common names) is more common than hoary puccoon, *L. canescens*. Hoary puccoon is a better indicator of a prairie that has had little or no disturbance, as it tends to be intolerant of grazing or changes to the soil. Neither puccoon is to be found in native plant nurseries, because the seeds are stubborn about sprouting ("lithospermum" means "stone-seed") and transplants tend to die after a year or two even if they are given all possible attention.

Over the years, I've heard and read many ways to distinguish between the two, but none is entirely satisfactory. I've heard it asserted that hoary puccoon starts blooming before Carolina puccoon. This is true, but often not helpful, for to know which plant you are looking at right now, you need to have been watching to see if it had bloomed earlier than plants of the other species—and you might not find both species together at the same site.

Hoary puccoon's blossoms are somewhat more orange and smaller than those of Carolina puccoon. True again, but I find it hard to judge "more orange than" or "a little smaller than" if I don't have the two species side by side. Hoary puccoon's leaves tend to be broader than those of Carolina puccoon. The key word is "tend". It is not always true, especially when the plant is mature enough to bloom. I have found hoary puccoon with deceptively narrow leaves.

Hoary puccoon tends to have fewer flowers per stem than Carolina puccoon. Again, the key word is "tends". Carolina puccoon generally puts on a better show: I've seen one plant that had grown to the diameter of a bushel basket, with its top a blaze of golden-yellow. But smaller specimens are not so easy to distinguish from hoary puccoon.

I surmise that everyone who gets to know these plants has a favorite way of telling them apart. My way relies on the texture of the leaves. Both species have hairs on the leaves, as the hoary/hairy names suggest. (*hoary* refers to the hoarfrost-gray tone sometimes seen on the leaves, caused by the fine hairs.) On hoary puccoon, the hairs are soft and give the leaf a velvety feel. On hairy (Carolina) puccoon, the hairs are stiff and bristly. This distinction works for me, but you will want to feel the leaves of both species a few times and compare them before you will be confident about using this method. It's easy—all you have to do is to find the two species growing side-by-side.

The 1 in 20 Rule for plant collectors—a rule of thumb

The 1 in 20 Rule, explained by David H. Wagner in the *Oregon Flora On-Line Newsletter* (July 1995), is that a botanist never collects more than 1 out of 20 plants. This means that at least 20 plants have to be found in a given location before the botanist is justified in collecting 1 plant. Similarly, if 40 plants are found, 2 plants may be collected. This applies also to parts of plants. Remove no more than 5% (one-twentieth) of a plant, 1 fern frond from a clump of 20, or 5% of the seeds from a given plant. Wagner consulted a population geneticist who said that contemporary statistical theory would support this rule. This rule has been published also in the journal *Taxon*, and elsewhere.



Lithospermum carolinense
subsp. *croceum*

(drawn by Tanya Beyer on Note Cards)

Potpourri

•**Fire Effects on Rare and Endangered Species and Habitats** conference will be held March 22-25, 1998 at Coeur d'Alene, Idaho. For details contact Maria Greenlee, IAWF, PO Box 328, Fairfield, WA 99012; E-mail: greenlee@cet.com

•**Witch-hazel** (*Hamamelis virginiana*), native of Minnesota, was established as a family by Linnaeus in 1742, based on descriptions by a British missionary John Banister. Witch hazels are pollinated by nocturnal winter moths that fly at air temperatures as low as freezing and feast on the flowers. (*Virginia Native Plant Society Bulletin*, Vol. 16, No. 5, 1997)

•**Plants, Man and Life** is a 1997 reprint of a book published by Edgar Anderson in 1952, and reprinted in 1967. It is available from the Missouri Botanical Garden Press, St. Louis. It sells for \$16.95.

•**Fotographs of Flowers** is an exhibit at the Minneapolis Institute of Arts, from January 24 to May 17, 1998. Photographers include Ansel Adams, Les Friedlander, Edward Steichen, and James Van Der Zee. Call 612-870-3131.

Government Land Survey Prior to an area being "opened" for settlement by the US government, it was surveyed to facilitate land sales. Teams of 2-3 surveyors would divide an area into townships (6 miles x 6 miles) and these townships were further subdivided into 36 sections (1 square mile) which were each further divided into four quarter sections; they recorded the types of land and types of plant communities they observed. To mark the corners of these various legal subdivisions, the surveyors would record the identity, size and position of four "bearing trees" which could then be located by a settler as he (mostly) staked his claim to land. This was fine if trees were present, but in prairie areas the surveyors had to resort to digging pits and inserting charred stakes. They also threw handfuls of osage orange into the pits, not knowing that Minnesota's winters were too cold for this species (why osage orange was chosen is another story). Today copies of the survey records are housed at the Minnesota Historical Society and the Bureau of Land Management in Washington. Much of this information will become available soon in electronic format.

Big Woods in the 19th century Based on the Government Land Survey records, roughly 80% of the Big Woods region was Big Woods forest, and the remaining 20% was prairie, open oak woodland or savanna, and wetland. The records don't report the specific names of the prairie or wetland plants but we know from the study of remnant areas that big bluestem (*Andropogon gerardii*) and little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), lead plant (*Amorpha canescens*), compass plant (*Silphium laciniatum*) and many other species common to tallgrass prairie were widespread. Charles Geyer, a botanist present during the Joseph Nicollet expeditions through the Big Woods Region (1838-1839), recorded blazing star (*Liatris* spp.), many species of *Aster*, stiff (*Gentiana quinquefolia*) and downy gentians (*G. puberula*), and a host of other species.

Savannas and woodlands were dominated by bur oak (*Quercus macrocarpa*) or red oak (*Q. ellipsoidalis*), but aspen (mostly *Populus tremuloides*) was common, especially in the northwestern part of the region. In some locations these savannas had the appearance of a city park with large, broadly spreading trees opening over open grassland while in other locations there may have been a dense thicket that was nearly impassable.

The most frequently seen tree in the Big Woods forest was elm (27%, *Ulmus rubra* and *U. americana*) followed by basswood (14%, *Tilia americana*), sugar maple (12%, *Acer saccharum*), hop hornbeam (7%, *Ostrya virginiana*), ash (6%, *Fraxinus* spp.) and red oak (7%, *Quercus ellipsoidalis*).

This forest was termed a maple-basswood forest because of a classic study in the 1930s of a Big Woods forest remnant near Minnetonka and another near Northfield (a site now occupied by the Black Steer Restaurant on highway I-35).

Perhaps the importance of elm was missed because it wasn't often seen at these specific sites. These forests must have been quite a sight, and Geyer records that the trees were "to be found in a perfection & health & size which is not to compare with any timber at the River [Minnesota] or Mississippi [sic] about St. Peters". In the spring these forests would have been carpeted with ephemerals like trout lily (*Erythronium albidum* or *E. propullans*), Jack-in-the-pulpit (*Arisaema triphyllum*), bloodroot (*Sanguinaria canadensis*), and *Trillium*; later in the year, ginseng (*Panax quinquefolium*) and yellow lady slipper (*Cypripedium calceolus*) would have been common.

History of the Big Woods But what about prior to the 19th century? What if you were in a time machine and could travel back 500 years or 5 000 or 8 000 or 10 000 years ago? What would this area have been like? This is a great game to play when you are traveling by car—but be sure to also keep your eyes on the road!

To answer these types of questions, palynologists look at fossil pollen present in the sediment of lakes and bogs. Pollen from plants is resistant to decay and each year some pollen ends up in bogs and lakes and each year a little more sediment or peat accumulates providing a record like the rings of a tree but stretching back much further in time. From this kind of information we know that there has been a lot of change in the types of plant communities within the Big Woods and elsewhere in Minnesota and I encourage you to attend the MNPS symposium (June 6, 1998 at the Minnesota Landscape Arboretum) to hear talks about the paleoecology and glacial history of Minnesota.

Pollen and age From pollen analysis we learn that the Big Woods was only about 200-300 years old at the time of the Government Land Survey and that prior to this, much of the area occupied by Big Woods was in fact oak-aspen woodland or savanna or prairie. What caused the Big Woods to expand or perhaps more accurately what prevented it from expanding? Attention has long focused on the role of fire.

Role of fire Nicollet's journals from his explorations of southern Minnesota carry many accounts of fires or the effects of fires. Frequent fires kill young trees (even the tops of small oaks) preventing the expansion of forest into prairie.

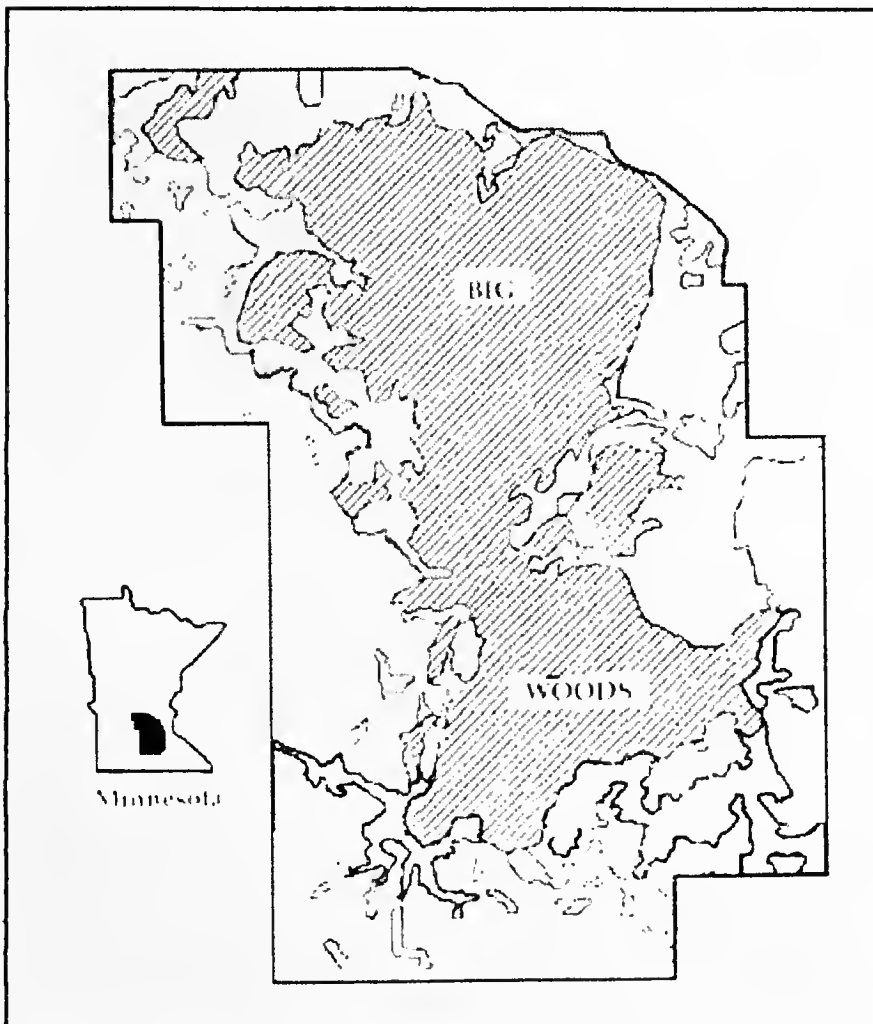
The role of fire in explaining this change is reinforced by the observation that the 19th century border of the Big Woods forest corresponds with the location of fire breaks. These included the Minnesota River and hilly terrain (fire travels more slowly down hills) dotted with lakes to the north and west, and lakes and the Cannon River to the south and east.

Many of these fires were probably set by people, suggesting that a large decline in the population of Native Americans due to disease—introduced by
(continued on page 7, column 1)

Europeans—resulted in a reduction in fire frequency; there is very little evidence to support this idea. We have so few written records from this time period that it is hard to say for sure one way or the other, but most researchers have concluded that a shift toward a cooler and moister climate explains the necessary reduction in fire frequency. This shift has been termed the “Little Ice Age” and was the same shift responsible for the long, cold winters in Europe during the 16th, 17th and 18th centuries.

Plants can migrate fairly rapidly but the speed at which the elm, sugar maple, basswood expanded their range suggests that they were already present prior to the onset of the Little Ice Age, growing as small, isolated islands within areas protected from fire such as steep river valleys or adjacent to lakes.

Once established, the Big Woods forest may have been largely self-protecting. The leaves of elm, maple and basswood and other litter are kept damp due to the dense shading by the forest canopy, and these leaves decay rapidly (walk in a Big Woods forest in mid-summer and you will see few leaves on the ground). This means that the fuel needed for a fire would not accumulate from year to year; also leaves would be damp, further limiting the spread of fire. Even so, some small, slow ground fires would have been possible. Observations of a few sites indicates that such fires can occur but that only the young seedlings are killed and the larger maples are unaffected. Research in the Great Smoky Mountains of Tennessee indicates that bark thickness increases greatly with tree size for many species, thereby protecting the larger trees.



Perhaps we need to consider controlled burning of our Big Woods remnants in how we manage for future biodiversity. Before we take such a step, we need controlled experiments, and we also need to look for evidence of such fires from the past. I am currently searching for evidence of fires in the form of microscopic charcoal fragments that would have been produced by such fires and later deposited into lake sediments just like pollen is deposited.

Conclusions Study of the Big Woods has improved our understanding of the ecology of the prairie-forest border and has highlighted the manifold effects of climate on vegetation. For the Big Woods, climate can change fire frequency to shift the balance between prairie and forest. More fire means more prairie and less fire means more forest. Such understanding should enhance our predictions of potential future climate changes predicted by global warming; unfortunately, efforts to preserve the few remaining examples of Big Woods are being made increasingly difficult by the expansion of the Twin Cities' metropolitan area.

MNPS Conservation Committee focuses on 4 of 8 topics discussed at its meeting

Four topics were selected at the meeting December 4, 1997, to focus attention of MNPS members (meetings are at 6 PM):

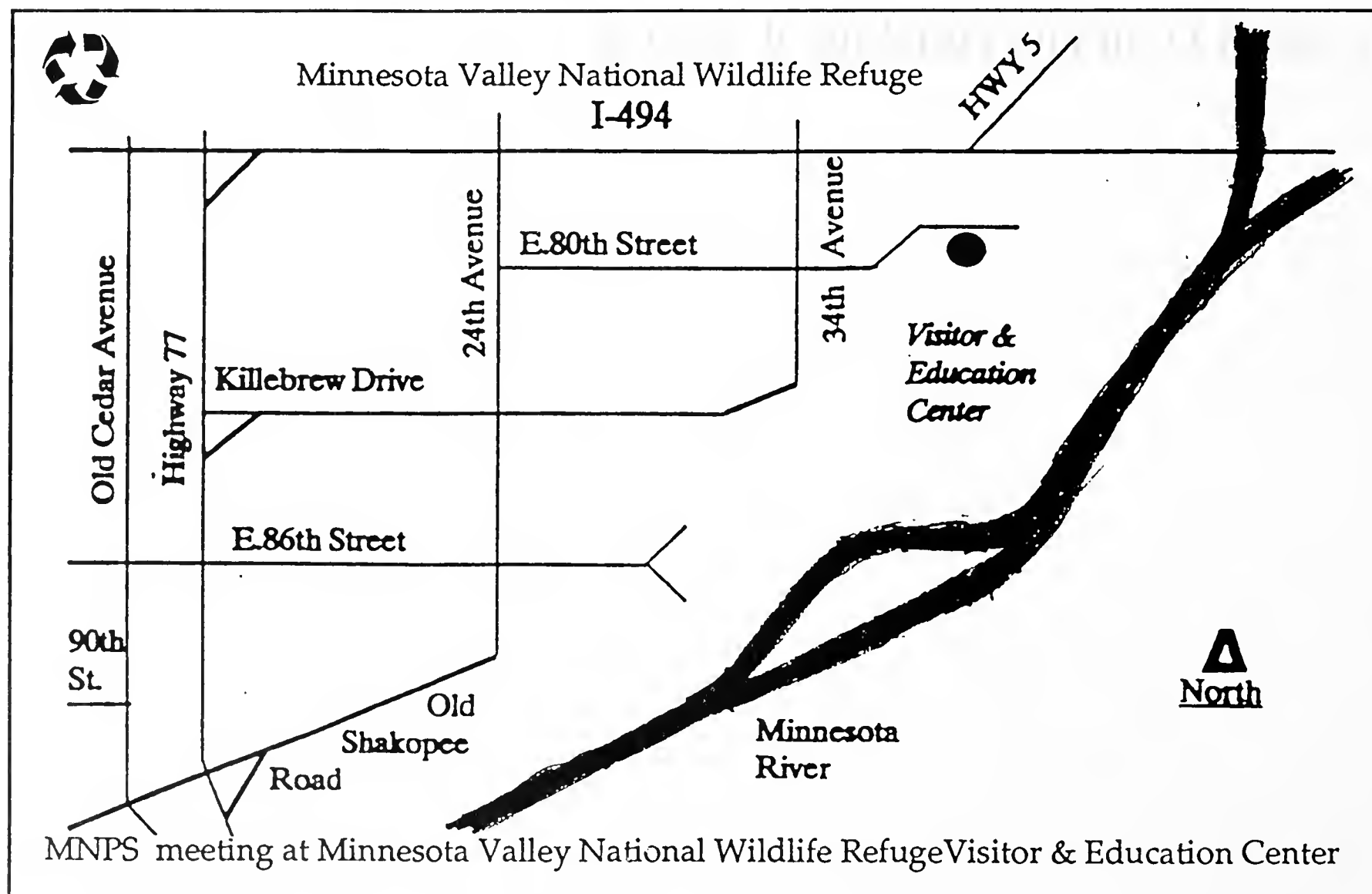
Savage Fen The Savage Fen may be destroyed by the extension of Scott County Road 27 through this rare and calcareous fen. Moreover, the city of Savage wants to extract more groundwater from this area. The city is considering digging a deeper well which could avert effects on the fen. The DNR has to give permission for the county to extend the road. If concerned, contact Steve Colvin, DNR Division of Game & Fish, Box 25, 500 Lafayette Rd., St. Paul, MN 55155-4025; telephone (612) 296-0786; fax (612) 296-1811; E-mail: steve.colvin@dnr.state.mn.us.

Nongame Wildlife Checkoff The “chickadee checkoff” on state income and property tax forms, started in 1977, has supported more than 1 000 projects. Just over \$900 000 was collected in 1996. If the legislature matches donations, the program could be fully staffed and new projects started.

Re-dedication of Net Lottery Proceeds Currently, 40% of net proceeds of the Minnesota lottery revenues are dedicated to the Environment and Natural Resources Trust Fund—this program expires January 1, 2001. A constitutional amendment is needed to make this dedication permanent; the legislature must vote this year to place the amendment on the 1998 ballot.

Minnesota River Clean-Up The Minnesota River Conservation Reserve Enhancement Program created in the 1996 federal farm bill would restore 190 000 acres of flood-prone cropland in the river basin. The US government will contribute \$200 million and the state \$50 million, but the program is dependent on approval by the state legislature.—by *Gerry Drewry*, board liaison member; (*Val O'Malley*, chair).

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Minnesota Plant Press

The Minnesota Native Plant Society

Newsletter

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APR 13 1998

NEW YORK
BOTANICAL GARDEN

Volume 17, Number 3

Spring 1998

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600 612-335-2323

6:30-7:00 PM—Refreshments, Room A
7:00-8:30 PM—Program & Society Business
8:30 PM—Socializing
9:30 PM—Doors close sharply at 9:30 PM

Programs

April 2 *Mound Prairie Scenic and Natural Areas*, Ken Kailing. POM: *Solidago rigida*, Char Bezanson.

May 7 *Biology of Leedy's Roseroot*, Joel Olfelt (UM); POM: Boxelder, Margaret Rodina

June 4 *Perennial Prairie Forbs: Nongrasses in a Sea of Grass*, Clarence Turner; Plant Sale

June 6 *MNPS Symposium* (see page 4)
Also see enclosed brochure

June 27. Field Trip to Mounds Prairie and Prairie Moon, and more (see page 3)

MNPS Web Site:
<http://www.stolaf.edu/depts/biology/mnps>

Deadline for summer issue is June 15, 1998

**Note Proposed Bylaw
Changes on page 7**

Climate change, humans and plant dispersal

Fire, flood, windstorms, and burrowing or grazing animals disturb established plant communities and render them more vulnerable to invasion. This suggests that future climate changes that kill existing plants or lead to more frequent fires or windstorms would increase the probability that dispersed propagules would be able to establish themselves. People, however, have strikingly altered disturbance regimes. Cheatgrass [*Bromus tectorum*], for example, was able to establish itself so easily in part because settlers introduced livestock, and the grasses native to the intermountain West were intolerant of trampling. People who introduced larger animals such as water buffalo and wild boar, have also contributed to rapid spread of exotic invasive plants in Australia and Hawaii.

The net effect of human intervention is hard to predict. Although people disturb large tracts of land by tillage and grazing, they also suppress some natural disturbances, such as wildfire. Suppressing fire prevents the invasion of forests with a dense understory vegetation of shade-intolerant saplings. On the other hand, it has allowed Midwestern oak woodlands to be invaded by fire-sensitive species such as buckthorn and Australian sclerophyll (drought-tolerant) forests to be invaded by rain-forest species.

Because people have moved plants around the world for horticultural and landscaping purposes, we may have set the stage for massive invasions by exotic species. Botanical gardens and other large repositories of alien species have long been sources of invasion by plants but such specialized facilities are not the only culprits. People routinely plant both native and alien species in their gardens and parks, far from the native ranges of these plants.—Material selected from article "Plant migration and climate change", by L.F. Pitelka and others (*American Scientist* 85: 464-473, 1997)

Seed Collecting II

As members of the Minnesota Native Plant Society, we are concerned about the protection of native plants in their natural habitat, and at the same time we are interested in growing native plants, either in gardens or in restoration projects. Protecting native plants in their natural habitat and propagating them in the garden are directly connected. Protection of natural habitat -- the only feasible way to protect plants and animals over the long term depends upon our ability to educate the public about the value and beauty of native plants and there is no better way to do this than showcasing these plants in the garden; at the same time our access to new plants or new varieties for the garden depends upon the continued existence of natural populations.

Last fall, I raised the question of how to collect seeds of native plants to minimize damage to natural populations and asked for suggestions from MNPS members. Several people responded, including David Crawford who described some of his efforts at Wild River State Park and pointed out that involving people in large-scale seed collecting was another way to teach the value of native plants. Other suggestions included (1) taking no more than 50% of the seed of a strong perennial or less for an annual, (2) avoiding small, high quality remnants (no matter how attractive the seed), (3) being sure that the seeds were ripe (e.g. stems dry, seeds dark, and some seeds dropping to ground) and not pulling hard on the plant (4) exchanging information with other collectors and sharing seed to avoid over-harvesting an area, and (5) being sure you are able to propagate the seed, else you should consider purchasing seeds or plants from a local native seed or plant growers.

You need to also be sure that the seed source was relatively near the area where you intend to plant. Distance is a concern for genetic reasons. The botanists Clausen, Keck and Hiesey showed that yarrow (*Achillea lanulosa*) growing in Sierra Nevada showed considerable variation in height and other characteristics depending upon where it was collected and that these differences were genetic. Similar genetically based differences have been shown for the flowering time of cattails growing at different latitudes and for many other characteristics for a range of species, and these can be related to differences in the length of the growing season, or moisture, or light or other aspects of the environment. Even on a local scale, as demonstrated for big bluestem (*Andropogon gerardii*), plants growing just a few yards apart may differ in their genetic make-up.

Introducing seeds from distant locations is a problem because (1) the environment you plant them in may be so different and the plants won't survive, (2) the plants grow "too well" and overgrow your garden or restoration and escape, or (3) the new plants escape and interbreed with existing plants of the same species and so reduce overall genetic diversity. Reduced genetic diversity lessens the ability of the species as a whole to respond to future environmental changes.

Recommendations as how far is "too far" vary. Recommendations include (1) checking with Ownbey and Morley's *Vascular Plants of Minnesota* to make sure the species grows in your area, (2) being sure that the seeds came from within 75 miles of where you intend to plant (recommendations vary from 25 to 75 miles), (3) avoiding varieties being sold at garden shops, and (4) being sure that if you collect your own seeds that you collect a few each from several plants rather than many from one. —Charles Umbanhowar

Remember the Symposium on June 6, 1998

The Minnesota Native Plant Society

Minnesota Plant Press

Thor Kommedahl, editor

University of Minnesota, 495 Borlaug Hall,
St. Paul, MN 55108; 612/625-3164 (work).

E-mail thork@puccini.crl.umn.edu

Membership dues are \$12 per year for regular members and includes subscription to the newsletter; dues for students and seniors are \$10, for family \$14, for institutions \$20, and donors \$25. Checks can be made out to: Minnesota Native Plant Society, and sent to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

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The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

Announcements

Listserv sponsor changed

The Minnesota Native Plant Society sponsors a listserv to facilitate conversation among our members on issues related to native plants. The address for the listserv has changed from the University of Minnesota to St. Olaf College to avoid the annual fee charged by the university. Members of MN-NATPL have automatically been transferred. Persons wanting to subscribe to MN-NATPL should send an E-mail message to: mn-natpl-request@stolaf.edu and be sure to include the word "subscribe" and the name and institutional affiliation in the body of the message. To unsubscribe, send an E-mail message to the same address and the word "unsubscribe" should be placed in the body of the message. Messages to the MN-NATPL listserv will be archived and accessible soon through the MNPS WWW page (<http://www.stolaf.edu/depts/biology/mnps/index.html>).—Charles Umbanhowar.

DNR Fact Sheets Available

The Department of Natural Resources (DNR) has published a series of *Fact Sheets* that may be of interest to members of MNPS:

- Grow Plants Native to Minnesota
- The Truth About Exotic Species
- What Am I Getting Into?—A Guide to the Process of Growing Native Plants
- Selected References on Cultivating, Propagating & Managing Native Plants
- Steps to Choosing the Best Plant Materials for your Site
- Looking for More Help? Contact: Native Plant Suppliers and Landscapes
- What in the Blazes does Prescribed Fire Mean?
- Prescribed Fire Equipment Suppliers

Copies may be available at MNPS meetings, or contact DNR INFO Center, 612-296-6157, 888-646-6367. E-mail: info@dnr.state.mn.us

Planting Living History: Arbor Day Celebration, May 2-3

The Oliver Kelley Farm is planning an Arbor Day event with several objectives: planting on the Farm, introducing a new nature trail, ecological care at the Farm, environmental issues and the ecosystem—all in a mix of hands-on activities, discussion and demonstrations.

The celebration goes from noon to 5 PM on May 2 and 3, 1998, led by Jim Mattson and Bob M. Quist. No admission fee. The Oliver Kelley Farm is at 15788 Kelley Farm Road, Elk River, MN 55330. For details, call 612-441-6896; E-mail Jim.Mattson@MNHS.org, or Bob.Quist@MNHS.org.

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Request it from Don Knutson 612-721-6123 (work) or 612-379-7314 (home).

"Rare Plants of Minnesota's Arrowhead"—a field guide

This small (4 x 5.5 inch), 112-page, spiral-bound book by Deborah Shubat and Gary Walton contains photocopies of herbarium specimens in the Olga Lakela Herbarium at the University of Minnesota—Duluth, published in 1997.

Each page has a species, family, distribution, description, habitat, status (endangered, threatened, or special concern) with a colored photo on the opposing page.

Order from Olga Lakela Herbarium, Dept. Biology, University of Minnesota, Duluth, MN 55812. The book sells for \$10 plus \$0.75 tax and \$1.50 for shipping. Make checks payable to Olga Lakela Herbarium.

Field Trips

•Mound Prairie Scientific and Natural Area. June 27 9:30 or 10:00 AM. Hike and enjoy the view with Ken Kailing and Deb Anderson. We may visit the adjacent wetland as well as the mesic oak forest and dry prairie if the climate is good. Bring Liquids and Lunch if you will continue to Prairie Moon Nursery. Located between Houston and Hokah. I-90 E to 76 S take 16 E 7 miles. Meet East of SNA sign on North side of hwy. Park on forest road near gate and rock face.

•Prairie Moon Native Plant Nursery Tour. June 27 1:00 PM This annual visit to PMN production facilities, gardens and restorations is presented by members of the Wisconsin Valley Land Cooperative. From Winona, Hwy. 43 South, 1/4 mi. to Winona Co. 17, 7 mi. to Witoka, continue on Co. 17, 3.6 miles. From Rochester, I-90 to Hwy 43, north exit. Go south, left, on Winona Co. 19, 5.8 miles. Turn left, east, onto gravel Co. 17, go 1.5 miles. Prairie Moon Nursery is on the north side of the road.

•For details contact Deb Anderson Rt. 1 Box 152, Chatfield, MN. 55923 (507-867-4692). Or gary-deb@worldnet.att.net

Field Trip to the Lost Forty

Interested in a week-end camping trip? How about a trip to the Lost Forty, in Itasca County, in the Big Fork State Forest? September 12 and 13, 1998. If interested, call Nancy Albrecht, 612-869-7090, or write her at 6727 Emerson Ave. S., Richfield, MN 55423.

Woods, Warblers, and Wildflowers at Nerstrand Woods

April 29: 7:30 AM (warblers), 10 AM (wildflowers); **May 6:** 5:30 PM; **May 16:** 9 AM to noon. \$10 fee for adults, \$5 for children. To register, call 612-331-0767. Space limited.

CO₂, insects and plants

"Elevated CO₂ gives the [aspen] plants plenty of carbon to make sugars and starches, with enough left over to make abundant secondary compounds (which plants can use to defend themselves against insects and pathogens)" reported Bill Mattson, research entomologist with USDA Forest Insects unit at East Lansing, Michigan. (*NC News* January, 1998).

USDA Land Program

The Agriculture Department will add 5.9 million acres to the nation's largest private land conservation program and pay farmers more to set aside environmentally fragile land according to Secretary of Agriculture Dan Glickman—*Associated Press*.

Weaver Dunes adds new land

The Nature Conservancy recently purchased a 102-acre tract to add to the Weaver Dunes Preserve on the Mississippi River, near Wabasha. A sandy prairie here is home to Blanding's turtle and other endangered plants and animals. (*Nature Conservancy* 48[2]: 26, 1998)

Cancer attributed to knapweed

Jerry Niehoff, Idaho soil scientist, reports pulling knapweed with his bare hands, resulting in broken skin and getting sap into his hand tissues. After 6 months, lumps developed in his little finger. Eventually the growth was bad enough to require amputation of the finger, and later a second (ring) finger. A compound (not identified) in knapweed was reported to be carcinogenic by the medical doctor involved. For 2.5 years after the surgery, he has experienced no recurrence of the cancer. *Moral: wear gloves when weeding.* (*Bull. Virginia Native Plant Soc.* 17[1]: 7, 1998)

Wolves alter park ecology

Some 85-95 wolves now roam in Yellowstone National Park after their introduction in 1995. Wolves

have decreased the population of coyotes which in turn have increased populations of small mammals such as the ground squirrel—a favorite prey of coyotes. Raptors such as the golden eagle also increased in population; bears benefited by feeding on carrion left by wolves. Elk adjusted to wolves by spending more time in protected wooded areas instead of out in the open. Less grazing has favored vegetative growth in open areas. (*National Parks* 72[1-2]: 26-29, 1998)

Endangered Species Act

Since passage of the Endangered Species Act it has been difficult to document recovery of species. Theodore Foin and associates at the University of California, Davis, analyzed 300 recovery plans. Species were placed in 3 management categories: habitat preservation, habitat restoration, and active management. Preserving habitat requires the least input; however some species will survive only if the habitat is restored or a very active management plan is followed. Of 305 species, 37% could be saved by habitat preservation, 21% by habitat restoration, and 42% by active management. Thus, 63% of species analyzed require some form of management. How to manage endangered or threatened plants is difficult because of lack of knowledge about the species. Moreover, costs of management may be prohibitive for some species. Biologists seem to have a natural aversion to the idea of triage, but some choices may have to be made as to which species will be saved by some active plan of management. The authors recommend 2 changes in the recovery planning process: (1) all recovery plans must choose an appropriate management strategy, and (2) principles of "active management" must be incorporated into the evaluation and implementation of recovery plans. Effective recovery plans can bring the rarest plants and animals back from the brink of extinction. (*BioScience* 48:177-184, 1998)

Financial report for 1997

Cash on hand 1 January 1997	\$1714.84
Income during 1997	6021.60
Total assets 1997	2409.47
Expenses during 1997	3607.68
Balance on hand 1 January 1998	4128.76

Income	
Membership	\$3954.00
Donations	131.00
CD-ROMS	150.00
Wildflower Guide sale	960.50
Plant sale	489.50
Returned check	50.00
Uncashed checks	250.00
Interest checking acct	36.60

Total income \$ 6021.60

Expenses	
Printing & copies	1682.82
Postage	656.05
Speakers	300.00
Refreshments	35.27
Supplies	98.09
Phone	0.45
Paid services	150.00
Meeting Room rent	450.00
Arboretum dues	60.00
Filing Fee	25.00
CD-ROMS	150.00

Total expenses \$3607.68

Checking account balance 1/1/98 \$4728.76

Assets on hand January 1, 1998
CD #6567205944 at TCF 16 mo. @5.65%
due 4/18/98 \$.694.63

Total assets (checking + CD) \$4823.39

The checking account is #0726653 at Anchor Bank of West St. Paul

—Pat Ryan, treasurer

1998 MNPS Symposium

*The Way Things Were:
The Geology, Plants, and People
of Ancient Minnesota*

Have you wondered what plants you would have seen in your garden or in the park, 100 years ago? 1 000 years ago? 10 000 years ago? Why does your neighbor have clay soil and you have sand? Come to this symposium June 6, 1998, sponsored by MNPS and the Minnesota Landscape Arboretum. Speakers are Connie Patterson (Minnesota Geological Survey), Ed Cushing (University of Minnesota), and Clark Dobbs (Institute for Minnesota Archaeology). Registration will be \$15 (\$25 for non-members); it includes entry to the arboretum, coffee and rolls.

Thoughts about plants

"When I got to be 70, I thought, I'm going to take time to do what I really yearn to do, and that is work with native plants, wildflowers, and trees, and encourage their use in the nation's landscape so they won't just be something in the past but will be passed on to our grandchildren"—*Lady Bird Johnson*.

"I've often thought that if our zoning boards could be put in the charge of botanists, of zoologists, and geologists, and people who know about the earth, we would have much more wisdom in such plannings than we have when we leave it to the engineers".—*Supreme Court Justice William O. Douglas*.

"Whatever befalls the earth
befalls the sons and daughters of the earth.
We did not weave the web of life;
We are merely a strand in it.
Whatever we do to the web, we do to ourselves."—*Chief Seattle*

Guide to Spring Wildflower Areas —still available

This MNPS guide prepared by Marilyn and J.B. Andersen, Jim Schuster, and John Moriarty has been updated, redesigned, and reprinted as the 1996 edition, and covers the Twin City natural areas. Vera Ming Wong prepared new illustrations. Purchase copies at regular meetings of the MNPS for \$3 each. To receive a copy by mail order, send \$6.50 (check or money order) to MNPS, c/o Char Bezanson, The School Nature Area Project, 1520 St. Olaf Avenue, Northfield, MN 55057. Make checks payable to MNPS.

Have you seen *The Plant-Book: A Portable Dictionary of the Vascular Plants*, by D.J. Mabberly—second edition, in 1997? Published by Cambridge University Press, 40 West 20th St., New York, NY 10011.

Prairie Disturbances

"It may seem paradoxical that disturbances of the prairie by digging animals, floods, fire, and even local overgrazing were essential to maintenance of the fully developed prairie itself. Close examination of luxuriant grassland will usually show that here and there all the plants that become conspicuous during succession actually persist on the prairie at all times. They are able to sustain themselves in suitable microhabitats made by gopher mounds, badger diggings, anthills, drifted soil, and abandoned mouse runways. With a little thought we can see that these things must be so. If there had never been a disturbance on the prairie, then competition from all the final-stage plants would have killed the annuals, the invaders, and the intermediate-stage plants, leaving nothing to renew the prairie when catastrophe finally happened. When we see harvester ants, ground squirrels, and other disturbers of the soil, we should thank them for cultivating spots where lesser plants can persist in readiness to renew the land in time of need".—Selected from the book *The Prairie World*, by David F. Costello, page 194. 1969. *Costello was a plant ecologist from Nebraska who worked at the Pacific Northwest Forest and Range Experiment Station, and was chief of the Division of Range, Wildlife Habitat, and Recreation Research until 1965.*

The Jerusalem Artichoke

The Jerusalem artichoke (*Helianthus tuberosus*) is a sunflower, not closely related to the French artichoke, and has no relation to Jerusalem; in fact, it is a native Minnesota plant, and was valued by American Indians. It was introduced into Europe, where the Spaniards called it *girasol*, which was their word for sunflower, and this got corrupted to Jerusalem. French artichoke is a composite (*Cynara scolymus*) and its immature flower heads are cooked and eaten.

Plant Lore

What is Canada mayflower?

It is *Maianthemum canadense*. The genus name means May (*maius*) flower (*antheion*). It is also called "false lily-of-the-valley" because of the similarity of leaves, colonial growth, fragrant blossoms and both belong to the lily family. It even has another name "bead ruby" because of the dark red fruits that look like beads.

Is it native to Minnesota?

Yes, in fact, it is the only species of this genus in northeastern and north-central North America. It has no garden relatives, but many use Canada mayflower as a ground cover in landscaping, it being a perennial.

Where does one find Canada mayflower?

Look for it in spring on the forest floor, or woodland edges. Individual plants are 3-6 inches tall, and have tightly curled leaves when stems emerge to reveal one to three leaves; however only the plants with 2 or 3 leaves will produce the white flowers. About a month after blooming, fruits appear which at first are light colored with dark speckles and they contain 1-2 seeds—later they turn to a deep translucent red. These berries can persist all winter.

Are the fruits edible?

The berries are eaten during fall and winter by birds such as grouse, and by rodents such as chipmunks and mice. For humans, the berries have a not unpalatable bitter-sweet taste, but they can be somewhat cathartic; so berries should be eaten with caution.

Does it have any medicinal properties?

American Indians used a plant tea for headaches and as a gargle for sore throats. Folk medicine also advocated its use for coughs and sore throats. Incidentally, the roots have been regarded as a good-luck charm in winning games.

Lead Plant: *Amorpha canescens*

Charles E. Umbanhowar Jr.

Lead plant (*Amorpha canescens* Pursh) is one of the few native shrubs on the prairies of Minnesota. The common name may refer to the grayish color of the leaves or perhaps to an old belief that the plant was an indicator of lead ore deposits. *Amorpha* comes from the Greek *amorphos* meaning "without shape or deformed" in reference to the small (~1/4 inch) flower which is reduced to a single petal; and *canescens* is Latin meaning "gray-hairy". Lead plant is widely distributed throughout the prairies of Minnesota especially in mesic or dry areas. Individuals grow 1 to 2 feet tall. They are shrubby, meaning they have woody stems and their buds are above the ground, but they can bud from ground level if plants are burned or grazed. A member of the bean family, the leaves are compound, like most legumes, are 2 to 4 inches long, and are composed of ~25 pairs of grayish leaflets along a single axis (rachis). Flowers are born on several terminal spikes. An individual spike may contain 50 to 100 flowers. The massing of so many small flowers and the contrast of the single purple petal and yellow stamens of each flower can only be appreciated at close range but it is one of the great joys of viewing this plant. When pollinated each flower produces a single seed, borne in a small, gray-hairy pod. Seeds require both a cold period and heat to germinate. Heat can be provided by pouring boiling water over the seeds and then allowing the water to cool.

As a legume, lead plant is a host to nitrogen-fixing bacteria in its roots. The bacteria provide the plant with nitrogen in exchange for sugars that the plant produces through photosynthesis. These bacteria are available as inoculum from most native-seed suppliers. Intensive grazing will reduce the abundance of lead plant, and it does not tolerate cultivation. Periodic burning reduces plant size but increases plant number—a pattern found for many prairie legumes. I often use the presence of large lead plants or old, dead stems as a sign that an area has not been burned in the last several years.

Lead plant is one of 15 species of *Amorpha* present in the United States, and one of 3 species in Minnesota. False indigo (*Amorpha fruticosa*) grows 5 to 6 feet tall, and the leaflets are larger and seem to be less hairy than those of lead plant. Dwarf wild indigo (*Amorpha nana*) is found in the western, dry prairies of Minnesota. It is more diminutive in stature (~1 foot tall), and the leaflets are greener and more rounded.

Lead plant and the other amorphas have been used medicinally by Native Americans who called it "buffalo bellow plant" because it bloomed coincident with the rutting of bison. Drunk as a tea or smoked, the plant was used to treat ailments as varied as pinworms, eczema, and rheumatism.—Presented as a Plant-of-the-Month December 1997.

Greening the Great River Park Project

Cynthia Lane

Greening the Great River Park is a community-based project uniting citizens in planting and caring for a new kind of park in St. Paul's downtown Mississippi River Valley. For 3 years, volunteers planted native trees, shrubs, and wildflowers on both sides of the river from the highbridge to Holman Field Airport.

The project began when people recognized that this stretch of the Mississippi River had been severely degraded. Reforestation was first discussed in the mid-1980s as part of a plan for river front revival. However, it was the painting by Ben Thompson, depicting the river valley as it might look if reforested, that gave people a vision and gave momentum to the idea of reforestation. In 1993, Ellen Brown outlined a reforestation plan and the St. Paul Foundation agreed to support the project financially.

One of the first challenges for the project was to determine how to design the plantings to consider human needs (aesthetics, screening, etc.) and at the same time maximize ecological value. The project area has a wide range of land use, from remnant natural areas to highly industrialized uses, airports, and city parks. From work by Evelyn Howell and other restoration ecologists, and the unique nature of our project area, we developed several strategies to best meet human needs and increase ecological value. The Landscape Studies Center had developed a plan for the project area on restoring native plant communities to various parts of the project area. These guidelines were used to help identify the target community. Then, based on specific constraints and needs for the site, strategies were applied. For example, one strategy we use in areas where there are large expanses of lawns is to create a large grove of trees and shrubs planted at relatively high densities. The entire area is mulched with a thick layer of wood chips. This strategy is called "dense initial" and the advantage of a dense planting is that the planting fills in quickly and reduces the time required for weed control. The disadvantage is that it requires large numbers of plants. Several other strategies depend on the landowners needs and site constraints.

The project depends primarily on volunteers to do the plantings. The volunteer plantings have provided an opportunity for thousands of people to participate in the project. We feel that this has been an excellent way for people to become more connected to the river valley and learn more about the ecology of the area.

A key aspect of the volunteer plantings is volunteer supervisors. Master Gardeners, University of Minnesota students, Tree Trust, and many others have helped with supervision. However we always need more trained supervisors. If interested in supervising, please contact Kathy Dougherty at 612-225-5463.—This is a summary of a presentation at the November 6, 1997 meeting of MNPS.

Proposed changes in the Bylaws of the Minnesota Native Plant Society

Changes in the bylaws are noted as follows:

Deletions are *italicized* and underlined.

Changes are in **bold face** and are underlined

ARTICLES I and II. No changes

ARTICLE III. No changes except SECTION D.

SECTION D. All persons interested in the identification, life histories, and conservation of Minnesota's native plants, *regardless of age, sex, race or color, may apply for membership.*

ARTICLE IV. MEETINGS

SECTION A. *Monthly. At least eight* meetings of the membership shall be held *on the first Thursday of each month monthly*, October through **June**, and at such time and place as the Board of Directors shall determine. The secretary shall give due notice of all meetings via the *Minnesota Plant Press* newsletter. The meetings shall be conducted by the President, *and the Secretary shall take and record minutes.*

SECTION B. Regular meetings of the Board of Directors shall be held in **June, September, December, and March** at such time and place as the President shall determine. The secretary shall give due notice of all meetings via the *Minnesota Plant Press* newsletter and by telephone. The meetings shall be conducted by the President and the Secretary shall take and record minutes.

SECTION C. No change

SECTION D. The Annual Meeting of the membership shall be on the first **Thursday** of March or at such time and place as the President shall determine in the month of March. The election of Directors to the Board and transaction of pertinent business shall be conducted by the President, and the Secretary shall take and record minutes. The treasurer shall prepare and give an annual accounting of the corporation's receipts and expenditures which shall be published in the next newsletter. Chairpersons shall report on their committee's activities. A dinner may be held in conjunction as the Board of Directors shall determine. Notice of the Annual Meeting shall be given by the Secretary via the *Minnesota Plant Press* newsletter.

SECTION E. *Voting shall be by secret ballot. Directors will be elected by a simple majority.* An identified absentee ballot may be cast by mail. An absentee ballot may be obtained from the Secretary and must be returned to the Secretary before the election. Voting by proxy shall not be permitted. Election results shall be immediately announced by the President and published in the *Minnesota Plant Press* by the Secretary.

ARTICLE V- BOARD OF DIRECTORS

SECTION A. The policy and management of the affairs of the corporation shall be vested in a Board of **nine** Directors.

SECTION B. The Directors of the Board shall be drawn from the general membership and elected for staggered **two**-year terms, at the Annual Meetings.

SECTION C. No change.

SECTION D. The Board of Directors shall elect officers of the corporation at their **June** meeting.

SECTION E. No change.

SECTION F. The Board of Directors shall each year appoint a Nomination Committee of not less than three persons, chaired by **the Vice President**, to propose a slate of three new directors, with notice of the proposed slate being mailed at least 30 days prior to the annual meeting. The Nomination Committee shall propose a slate of new officers to the Board of Directors.

SECTION G. No change.

SECTION H. Directors shall serve **from the time of the June Board meeting following their election in March to the June meeting following** the election of their successor.

SECTIONS I, J. No change.

ARTICLE VI- OFFICES

SECTION A. The President, Vice President, Secretary and Treasurer shall be elected by the Board of Directors **in June**; and hold office for a term of one year **beginning immediately.**

SECTION B. No change

SECTION C. The Vice President shall actively assist the President, shall ~~preside~~ in the President's absence and **shall chair the Nomination Committee, and may (shall) be considered by (the Nomination Committee for the next presidency.**

SECTION D. The Secretary shall take and record minutes of all **Board** meetings and shall give due notice of the Monthly and Board meetings via the *Minnesota Plant Press* newsletter.

SECTION E. No change.

ARTICLE VII. No change.

ARTICLE VIII-STANDING COMMITTEES

The standing committees of the corporation are as follows:

1. Program, Education, and Lectures.
(2. Workshops and Field Trips.)
 - 2 3. Membership and Outreach
(4. Historian and Records)
 - 3 5. **Publications** (*Minnesota Plant Press newsletter*)
 - 4 6. *Research and Conservation.*
(7. Publicity and Welcoming)
- Other committees for special purposes may be created at the discretion of the Board.**

ARTICLE IX- NEWSLETTER

The *Minnesota Plant Press* newsletter shall be published *at least three times a year quarterly* in September (fall), January (winter), and May (spring) and at such other times that the Board of Directors determines.

ARTICLES X and XI. No changes

Minnesota Native Plant Society
University of Minnesota
220 Biological Sciences Center
St. Paul MN 55108

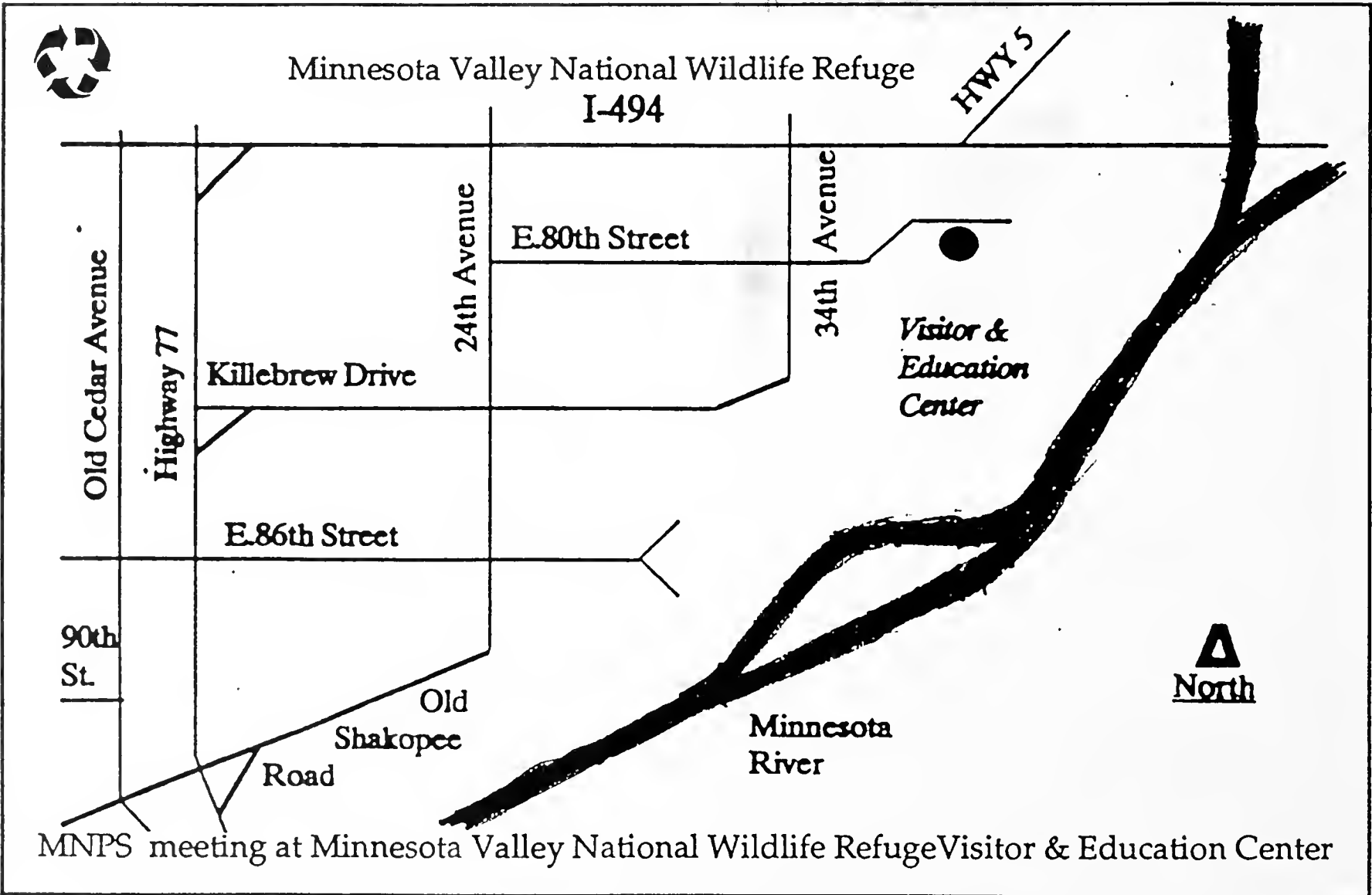
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Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 17, Number 4

Summer 1998

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street

Bloomington, MN 55425-1600 612-335-2323

6:30-7:00 PM—Refreshments, Room A
7:00-8:30 PM—Program & Society Business
8:30 PM—Socializing
9:30 PM—Doors close sharply at 9:30 PM

Programs

October 1

Native American Horticulture in the Upper Midwest, Michael Scullin, Mankato State University

November 5 To be announced

December 3 To be announced

There is no meeting in January

Field Trips (see page 3)

- **July 25**, Minnesota Valley Nature Center, Bloomington
- **September 11-13**, Lost 40, Itasca County

MNPS Web Site:

<http://www.stolaf.edu/depts/biology/mnps>

Deadline for fall issue is September 15, 1998

Minnesota's Changing Landscape

REPORT OF THE MNPS SYMPOSIUM HELD AT THE MINNESOTA LANDSCAPE ARBORETUM ON JUNE 6, 1998

This year's MNPS Symposium focused on the paleohistory of Minnesota's landscape. It was held on June 6, 1998, at the Minnesota Landscape Arboretum, a cosponsor. More than 55 people attended. The three speakers emphasized that Minnesota's landscape has been undergoing constant change over the past 10,000-15,000 years; however, changes over the past 150 years have been some of the most striking.

Carrie Patterson from the Minnesota Geological Survey was the first speaker and talked about the effects of the glaciers and glacial melting on the shape and form of the landscape. Of particular note was the formation of the Minnesota and St. Croix river valleys by water draining from large glacial lakes, and the fact that many of our lakes and hills result from shifting piles of rocky debris bulldozed by the glaciers or shifted and focused by melting, stagnant ice. In the Twin City metropolitan area, Buckhill and other hills may have been formed from jets of water exiting from the glaciers to thereby deposit debris.

Bemoaning the failure of this time machine, Ed Cushing from the Department of Ecology, Evolution and Behavior at the University of Minnesota explained how pollen was deposited in lake sediments and how fossil pollen grains can be studied to reconstruct the past vegetation of Minnesota. He described a Minnesota Landscape just after the glacial period that was dominated by spruce with the exception of the extreme northeast Minnesota that had tundra. This tundra was quickly replaced by pine or hardwoods, then by prairie that extended over much of the state by 7000 years ago. Prairie retreated westward again about 5000 years ago to be replaced by forest although the border between prairie and forest has shifted some as climatic conditions varied from wet to dry.

Clark Dobbs of the Institute for Minnesota Archaeology suggested that there were no natural landscapes—if the definition of natural meant the absence of humans. He described how different tools enable us to identify different periods of the Minnesota's landscapes by different cultures. The use of this landscape changed depending upon climate and the introduction of new technologies or foods, notably corn.—reported by Charles Umbanhowar Jr., St. Olaf College, Northfield, Minnesota.

Editorial

Native Plant Salvaging: Not Always a Good Idea?

Last week I learned that a local township planned to straighten a curve which would remove a section of hillside that is home to a remnant prairie. Although not "high quality"—this remnant had been heavily grazed and sprayed—it does contain plants such as lead plant, stiff sunflower, and coreopsis. I got permission from the landowner to move some plants to a 50-acre parcel of degraded prairie nearby.

This is probably a familiar story to many MNPS members who have had to watch favorite patches of native plants fall to the bulldozer and have tried to salvage plants before they were destroyed. Some people were so moved by this destruction that they set up salvage businesses to sell these plants at area greenhouses, hardware stores, and farmers' markets. So, if some plants can be saved from destruction, what is wrong with salvaging plants? There are several potential or real problems associated with plant salvaging, especially if plants are to be sold.

A first concern is that salvaging plants may encourage decision makers to approve destruction of native habitat. One can imagine a decision-maker saying, "Yes, it is too bad that we have to destroy this acre of woods but we are salvaging the plants so it isn't so bad." In fact, only a few plants will be salvaged and most will be destroyed because (a) they are not showy or desirable, e.g. wood nettle, (b) there are so many thousands that only a few can be collected, or (c) they are too large—overstory trees or underground parts of many prairie plants—or are not amenable to transplanting. Moreover, salvaging operations do not save associated insects and other animals.

A second concern is the fate of the plants that are salvaged. If the plants are part of a habitat restoration or rehabilitation project, there is a chance that they will continue as part of a reproducing population to preserve their genetic heritage. Unfortunately, most of the salvaged plants transferred to our gardens are no longer part of a fully reproducing population; if—as is unlikely—they or their descendents are still living decades later, there is no way of knowing where they are because there is no record of plants purchased. Furthermore, many popular native plants require specialized environments and much care—contrary to the claims of some nursery people. This does not deny that some flourish and add beauty to the garden. Some plants salvaged in Minnesota—orchids in particular—are shipped out of state, even to Europe while some of the plants we buy at garden stores come from Tennessee, Wisconsin, or other states.

A third concern is the procurement and sale of salvaged plants. People wanting to salvage trailing arbutus, or members of the orchid family, or certain other species for resale must obtain a permit from the Minnesota Department of Agriculture (Ag. Statutes, Section 17.23); a similar permit for endangered or threatened species is needed from the Department of Natural Resources. Once a plant is dug, its origin and whether it was obtained legally are not known. I suspect that the vast majority of commercial salvagers work legally; yet the nature of plant salvaging makes it impossible to regulate. Is this a problem? Some of us have seen evidence of plants being dug without permits. The illegal salvage and sale of threatened or endangered species is a misdemeanor while the fine for illegal sale of plants regulated by the Department of Agriculture is only \$50 plus court costs. Sale and salvage of most other species of native plants is not regulated at all.

Continued sale of salvaged plants can undercut the development of a legitimate nursery trade in native plants. As members of MNPS we should ask questions on plant origin, and start dialogues with legislators and the private sector. Perhaps we should sponsor a symposium on this topic.—Charles Umbanhowar, St. Olaf College

The Minnesota Native Plant Society

Minnesota Plant Press

Thor Kommedahl, editor

University of Minnesota, 495 Borlaug Hall,
St. Paul, MN 55108; 612/625-3164 (work).

E-mail thork@puccini.crl.umn.edu

Membership dues are \$12 per year for regular members and includes subscription to the newsletter; dues for students and seniors are \$10, for family \$14, for institutions \$20, and donors \$25. Checks can be made out to: Minnesota Native Plant Society, and sent to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

MNPS Board of Directors

President: Charles Umbanhowar, 213 Plum St. N., Northfield, MN 55057. 507-645-4386; ceumb@stolaf.edu

Vice-President: Bill Capman, Department of Biology, Augsburg College, 2211 Riverside Ave., Minneapolis, MN 55454. (612) 330-1072; capman@augsb.org

Treasurer: Pat Ryan, 9016 Kimbro Ave. South, Cottage Grove, MN 55016; 612-459-8554.

Secretary: Jackie Buffalow, PO Box 662, Mendota, MN 55150-0662. (612) 423-2011. secretary-mnps@mn.state.net

Deb Anderson, RR 1, Box 152, Chatfield, MN 55923; 507-867-4692 (home)

John Buffalow (see address for Jackie) johnbuff@mn.state.net

Dave Crawford, 4051 Gisella Blvd., White Bear Lake, MN 55110; 612-653-4385 (home), 612-583-2925 (work); birch7@main.goldengate.net

Gerry Drewry, 24090 Northfield Blvd., Hampton, MN 55031; 612-463-8006; 612-460-6755 (home) gdrewry@pioneerplanet.infi.net

Thor Kommedahl – address above.

Gary Perrault, 2229 Margaret St. North, North St. Paul, MN 55109; 612-773-9207; c-care@usa.net

Catherine Reed, University of Minnesota, Department of Entomology, 219 Hodson Hall, St. Paul, MN 55108. (612) 624-3636; reedx012@maroon.tc.umn.edu

The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

From the President...

As President of the Minnesota Native Plant Society and on behalf of the Board, I want to recognize the excellence and expertise of the speakers who have made presentations to the Society. At each meeting they've shared their research, photos, and observations with us, demonstrating the vast range of knowledge affecting the ecological balances of native plants and their environments.

Identification of the interests of our members is one of our goals for the upcoming year. As we implement member surveys we will solicit input to assist us in determining speakers and topics, in providing timely information on issues affecting native plant populations, in developing field trip opportunities, and in having a broader knowledge base of activities around the state.

Much of what MNPS accomplishes depends upon member suggestions. When you contact us by letter, phone, or E-mail, it helps us design and implement activities. If you want more *How to* information, for example, tell us. If you want more technical research information, or more non-technical, backyard guidance information, tell us. Regional field trips? Local resources? Are you interested in helping set up a monthly meeting, study group, action project, or field trip? Tell us!

An example of an important upcoming event—July 20-21—which directly affects 1000s of acres of Minnesota native plants, is the Annual Conference of the Vegetation Management Association of Minnesota (VMAM). As I am also on the planning and scheduling committee of VMAM, I know there is a strong shared interest with MNPS and some membership overlap.

July 20 will be a day of speakers sharing their technical information on management of vegetation in prairies, coniferous and deciduous forests, wetlands, and savannas. Then, on July 21, there are field trips with active field demonstrations and site visits.

Also, internationally recognized nature photographer, Nadine Blacklock, will do a photo slide presentation, *15 Years In A Photographer's Life*, at the evening banquet, on July 20.

The VMAM conference will be held at St. John's University, and it is open to anyone interested in learning about native plant uses, land management techniques, fire, living snowfences, aerial photography, chemical and biological controls, and the Minnesota Landscape Arboretum research on sustaining plant diversity in fragmented landscapes.

For full conference details, speaker and field trip roster, banquet and Blacklock information, and registration, call Paul Voigt at 612-779-5080.—*Gary Perrault*.

Some interesting Web sites on plants

Endangered species lists and legislation status: <http://www.fws.gov/r9endspp.html>

Medicinal plant drawings in color: <http://mobot.org/MOBOT/research/library/kohler/welcome.html>. Superb drawings by Hermann A. Kohler in 1887 but so good that are still used today.

Rainforest: related topics with Teacher's Guide and Multimedia Kit: <http://passport.ivv.nasa.gov/rainforest>.

Minnesota herbarium: http://www.cbs.umn.edu/herbarium/vasc_plants.html

Mushrooms: <http://www.mykowweb.com/>

California wildflowers: <http://elib.cs.berkeley.edu/flowers/>

Lewis and Clark expedition <http://www.pbs.org/lewisandclark>

News from the Board

•The Board elected the following officers for 1998-1999: Gary Perrault, president; Bill Capman, vice-president; Jackie Buffalow, secretary; and Pat Ryan, treasurer.

•The Plant Sale grossed \$680, which exceeded last year's sale. There was a greater variety of plants this year. Thanks for all who helped or brought plants.

•The first vote on bylaw changes passed 69 to 2. A second (and final) vote will be taken at the October meeting.

•The Board is considering the next symposium to be on seed sources and salvaging native plants. Watch for further developments.

Guide to Spring Wildflower Areas—still available

This MNPS guide prepared by Marilyn and J.B. Andersen, Jim Schuster, and John Moriarty has been updated, redesigned, and reprinted as the 1996 edition, and covers the Twin City natural areas. Vera Ming Wong prepared new illustrations. Purchase copies at regular meetings of the MNPS for \$3 each. To receive a copy by mail order, send \$6.50 (check or money order) to MNPS, c/o Char Bezanon, The School Nature Area Project, 1520 St. Olaf Avenue, Northfield, MN 55057. Make checks payable to MNPS.

HELP NEEDED FOR TREATS!

The MNPS Board thanks those who brought refreshments during the 1997-98 season. We request members to sign up for 1998-99 to bring finger food and one or more beverages—coffee is supplied by the MVNWR Center. Please call Dave Crawford at 612-653-4385 to volunteer. Thanks—*Dave Crawford*

The Art of Amazon Explorer Margaret Mee

The artwork of self-taught naturalist and Amazon explorer Margaret Mee is the new exhibit of *Margaret Mee: Return to The Amazon*, with 85 botanical watercolors and drawings on display starting September 19, 1998, at the University of Minnesota's Bell Museum of Natural History.

Born in England and long-time resident of Brazil, Mee made the first of her 15 trips to the Amazon rainforest at age 43. Until her death in 1988, Mee spent much of her life battling malaria, hepatitis and chain saws in efforts to document and preserve the region's vanishing flora. Mee discovered many of the plants shown in the exhibit, some of which are now thought to be extinct.

The exhibit will also feature replicas of Mee's jungle hut and field equipment, information on Amazonian ecosystems, displays of tropical plants and Mee's most famous painting, the elusive moonflower—a plant that blooms once a year and only at night. On loan from England's Royal Botanic Gardens, the exhibit will be on display until December 13, 1998.

The Bell Museum is dedicated to exploring diversity of life in the natural world, and to promoting an understanding and appreciation of nature through excellence in collections, education and research.

The museum is open to the public from 9 AM to 5 PM, Tuesday through Friday; 10 AM to 5 PM Saturday; and noon to 5 PM Sunday. Contact: Nina Shepherd, Bell Museum Public Relations, (612) 626-7254. University of Minnesota, 10 Church St. S.E., Minneapolis, MN; homepage: <http://www.umn.edu/bellmuse>

Lewis and Clark Center

The interpretive center opened in May 1998 near Giant Springs in Great Falls, Montana. Many plants used in landscaping are species described by Lewis in 1804-1806

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Request it from Don Knutson 612-721-6123 (work) or 612-379-7314 (home).

Kudos to nurseries that stop selling buckthorn shrubs

Thanks to Bachman Nurseries and other nurseries for discontinuing sales of columnar buckthorn.

Columnar buckthorn and other exotic species and varieties of buckthorn represent a danger to Minnesota native plants, and it is unfortunately more and more difficult to find a forest or prairie or even shallow-water wetland that is not overrun with buckthorn. Buckthorn is especially bad because it expands its leaves early and holds them late in the season and so shades out many native plants.

Seed distribution is rapid and widespread from the feces of birds making it difficult to eliminate the species from a site if shrubs are growing in nearby yards and gardens. It is also expensive to eradicate: for a small 3-5 acre woods on the campus of St. Olaf College, it took more than 400 hours of student labor and several hundred dollars worth of Tordon and Garlon to remove the buckthorn; yet there are still new sprouts coming up!

The Minnesota Department of Agriculture has a funding request pending of \$800,000 for Buckthorn Management and Control from the Legislative Commission on Minnesota Resources.

Ask the folks at the greenhouses or nurseries you visit if they sell buckthorn. If they don't, please thank them; and if they do, point out the problems with this plant.—*Clarence Turner, Minnesota DNR*

•July 25, 1998: 10 AM to 1 PM

Izaak Walton League Minnesota Valley Nature Center, Bloomington, Saturday

Please join us as we learn about deciduous forest management on the property owned by the Izaak Walton League on the Bloomington Bluffs. Goodman Larson will be our guide and is interested in sharing experiences on exotic species control and forest restoration. Bring your own lunch; beverages will be provided. Jointly sponsored by the Friends of the Minnesota Valley. Location is 6601 Auto Club Road, Bloomington. For a map and details please contact Nancy Albrecht at 612-858-0720 (day) or 612-869-7090 (eve).

•September 11-13, 1998

Lost 40 Scientific and Natural Area, Itasca County. Friday-Sunday.

Interested in visiting an outstanding old growth pine forest? The Lost 40, so-called due to a surveying slip back in 1882, is a 144 acre stand managed partly as a State Scientific and Natural Area and partly by the Chippewa National Forest (USFS). We will be camping at a nearby National Forest Campground (either Webster Lake or Noma Lake) which will also afford the opportunity of visiting a nearby bog. Family members and friends are welcome. Plan to bring your own food and camping equipment. Expenses limited to camping fees. Carpooling encouraged. RSVP required by August 28th. For more information and to RSVP, please contact Nancy Albrecht at 612-858-0720 (days) or 612-869-7090 (eves).

—*Prepared by Nancy Albrecht*

On field trips, bring hand lens, keys to flora or fauna, binoculars, bug spray, walking shoes, drinking water, food if near noon, etc.

Minnesota Native Plant Society Member Questionnaire

I MEMBERSHIP

1) How did you hear about MNPS?

2) Why did you join MNPS?

3) How long have you been a member of MNPS?

II MONTHLY MEETINGS

1) Within the last year, about how many meetings did you attend? _____

2) Of the ones you missed, what were the reason(s)?

- A) Other commitments
- B) Not interested in subject matter
- C) Bad weather
- D) Transportation problems
- E) Other

3) Listed below are the meeting topics of the past year. Which 3 were your favorites?

Oct 97 Lisa Mueller-Prairie & Forest Conservation

Nov 97 Cynthia Lane-Planting Native Species

Dec 97 Mike Halvorson-Native Plants for Shorelines

Feb 98 Vera Wong-Mingling Art and Botany

Mar 98 Photo Club presentation

Apr 98 Ken Kailing-Mount Prairie Scenic & Natural Areas

May 98 Joel Olfelt-Biology of Leedy's Roseroot

Jun 98 Clarence Turner-Perennial Prairie Forbs

4) How would the monthly meetings be more meaningful to you? _____

III SYMPOSIUM & FIELD TRIPS

1) Did you attend this year's Symposium? Why or why not? _____

2) If you were to select the theme for the annual Symposium what would it be? _____

3) Typically field trips have been held during the summer months. Would you be interested in attending field trips throughout the year? _____

4) In which of the following types of field trips would you be interested in attending?

- A) Natural areas
- B) Commercial growers
- C) Educational institutions
- D) Private/Public restorations
- E) Other _____

IV PERSONAL INFORMATION

1) What is your name (optional)? _____

2) What is your educational background? _____

3) How would you describe your knowledge of native plants?

- A) None
- B) Minimal - things I've picked up over the years
- C) Moderate - through self study, college courses, reading
- D) Extensive - through vocation and/or college major
- E) Expert - through teaching or lifetime achievement
- F) Other

4) Do you have any native shrubs, forbs, or grasses on the grounds where you live? _____

5) If so, did you

- A) Plant them yourself?
- B) Have someone plant them for you?
- C) Or were they already there?

6) What three things would you like to accomplish through MNPS?

1) _____

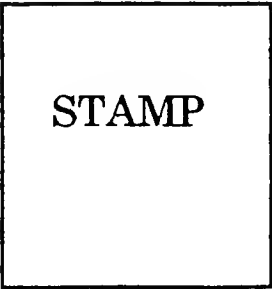
2) _____

3) _____

7) What skills can you offer to MNPS? _____

FOLD INTO THIRDS, TAPE ENDS, STAMP, AND DROP INTO MAILBOX, OR BRING QUESTIONNAIRE TO NEXT MEETING. THANK YOU.

.....



JOHN BUFFALOW
MINNESOTA NATIVE PLANT SOCIETY
PO BOX 50662
MENDOTA MN 55150-0662

.....

Native American Horticulture in the Upper Midwest

by Michael Scullin

By about 1000 AD the first gardeners in Minnesota were planting corn along the Blue Earth River just south of what is now Mankato. There certainly were other sites but this is probably the earliest one known for this time. These people were probably just growing enough corn for a corn feast in midsummer. The Green Corn Feast, in one form or another, was celebrated by just about every tribe east of the Mississippi River and some to the west. At this site shallow basins were excavated and in the ashy sand were the remains of charred kernels and ears which had been overly roasted on the occasion. This was 12-rowed southern flint corn which was grown extensively from southern Wisconsin south. There were no signs of storage facilities (pits) found on the site. Within a hundred years, possibly the same people but with a new identity, corn-growers had established a village and gardens along the Minnesota River northwest of Mankato. Their corn was a new variety—Northern Flint—and the plants that they grew and the techniques they used to grow them persisted into the 20th century. What they grew and how they grew it is the topic for discussion.

Abstract of a presentation to be given October 1, 1998, by Michael Scullin, Anthropology Professor at Mankato State University. This abstract is presented early so that everyone will have a chance to visit a restoration of a native garden this summer. Mike designed and provided seed for a garden at the Gibbs Farm Museum, at Cleveland and Larpentour Avenues just north of the St. Paul Campus, of the University of Minnesota.

Do you know of The Center for Plant Conservation? Write Missouri Botanical Garden, PO Box 299. St. Louis, MO 63166-0299. Or see Web page: <http://www.mobot.org.CPC>.

Perennial Prairie Forbs: Non-grasses in a Sea of Grass

by Clarence Turner

In tallgrass prairie, high plant species diversity results not from a large number of grass species, but from a large number of forb (non-grass, herbaceous) species. Forbs exhibit morphological, life history, and ecophysiological characteristics that contrast sharply with those of the dominant grasses. Success of individual forbs results in well documented patterns of abundance relative to topographic position and burning regime. In the tallgrass prairie of the Kansas Flint Hills, forbs are much more abundant in long-term unburned areas than in frequently burned areas and more abundant in uplands than in lowlands. I examined whether differences in nitrogen and light availability resulted in differences in photosynthetic rates that could account for the observed landscape level patterns in forb abundance. Nitrogen availability did not appear to limit forb physiological processes. High nitrogen availability (following fertilization) enabled higher rates of photosynthesis at low light intensities in some species but did not result in higher maximum photosynthetic rates. Greater light availability to forbs was associated with lower grass biomass production and may account for much of the variation in forb distribution. Forbs did not appear to adjust morphologically to different light environments. Consequently, where grass growth was greatest (burned lowlands) most forb leaf area was displayed in low light. In contrast, where grass growth was lower (unburned areas and uplands), much more forb leaf area was displayed in high light. These patterns correspond well with patterns of forb distribution in the Flint Hill landscape of Kansas.

Summary of presentation at a meeting of the Minnesota Native Plant Society, June 4, 1998.

Plant Lore

What is pickerelweed?

Pickerelweed is a perennial aquatic herb native to Minnesota and known as *Pontederia cordata*. Giulio Pontedera was a professor of botany in Padua, Italy, in the early 1700s. *Cordata* refers to the heart-shaped leaves.

Why is it called pickerelweed?

It got its name because it grows in shallow water (rarely over 3 feet) where pickerels swim and lay their eggs, even though such waters are home to other fish species as well as turtles, frogs and muskrats.

Is this the only plant species in shallow water?

No, arrowhead also grows there and their leaves are similar to pickerel weed, leading to misidentification. Nearer to shore are cattail and loosestrife and farther out are water lilies.

How does this plant grow?

Rhizomes are produced in the mud, and leaves grow in rosettes from them. Blue flowers clustered on a spike several inches long appear on a separate stalk growing from the center of the rosette. One seed is produced per flower which ducks feed on in fall.

How are plants pollinated?

Pickerelweed has 3 types of flowers, each found on separate plants. The female part may be short, medium, or long. Whatever the length is, the male parts are at the 2 remaining lengths. Female parts can be fertilized only by pollen from male parts of the same length, from another flower, or plants will not produce fruit. A bee that visits no other plant pollinates flowers and the bee's emergence coincides with anthesis.

Are plants edible?

Each fruit contains 1 seed that is starchy, highly nutritious, and can be eaten fresh, dried, roasted, or ground into flour. Young leaves can be chopped and added to salads or cooked green.

Book Review

The Tallgrass Restoration Handbook For Prairies, Savannas, and Woodlands. 1997. Stephen Packard and Cornelia F. Mutel (eds). Island Press. Washington, DC. 432 p. \$50 cloth, \$25 paper

This recent guide to restoration is a collection of 21 chapters describing everything from the effects of bison to monitoring vegetation to restoring populations of rare plants. The editors have organized the handbook into five sections beginning with some basic background, and *Goals and Planning*. Chapters in the *Seeds and Planting* section describe interseeding and make recommendations for successful collection and storage of seed. *Management and Monitoring* chapters include tips on successful burning and species-specific recommendations that are especially helpful for chemical or cultural control of exotics. The final section on *Animals* includes some pertinent information about bison and insects but will be of most interest to people working on large restoration projects.

The chapters are short, to the point, and very readable although one concern this reader had was in distinguishing between recommendations based on anecdotal observations and those based on controlled studies. Another concern is the lists of plants included in the back of *Appendix* as a guide to planting. Although this list is helpful in avoiding plants that are out of their range, many plants are found in one part of a state and not in another. For example, *Stipa comata* and *Ratibida columnifera* are both listed as native to Minnesota but occur only in the westernmost counties. Despite these problems and the high price tag, this is a good book to have for your own or to request from your local library.—Charles Umbanhowar Jr., St. Olaf College, Northfield, Minnesota.

Seed collecting at Wild River State Park

Help Bring Back a Prairie at Wild River State Park, Almelund, Minnesota, on September 19-20 and 26-27, 1998, at 1 PM, and on October 3-4 and 10-11, at 1 PM. Can you help us break last year's record for seed collection? You'll have a chance to learn what makes a prairie, why prairies are important, and how they can be recreated. Help keep this rare habitat and its plant and animal species healthy by helping Wild River State Park collect wildflower and grass seed and prepare seed for sowing. Your contribution will make a big difference in the future of the park. Hands-on learning is available for individuals, families, scouts, and school groups. Come just once or as many times as you like. Call Dave Crawford about mid-week opportunities or ask questions at 612-582-2925 (or E-mail dave.crawford@dnr.state.mn.us). Be prepared to walk in grassy fields. Meet at visitor center.—Dave Crawford

Botanizing at Carlos Avery Wildlife Management Area: A report by Dave Crawford

On May 19, 1998, Diane and I went on a short excursion to a part of Carlos Avery Wildlife Management Area today where I had been shown some pasque flowers years ago. It is on the east side of highway I-35 north of the town of Wyoming.

We seem to be attracted to sand prairies and dune areas, possibly because prairies which had rich soil are hard to find after 150 years of agriculture. (We've visited Weaver Dunes, Grey Cloud Dunes, Bunker Prairie, Bayport Savanna SNA, and Michigan's Grand Sable Dunes. We hope to get to Sand Dunes State Forest later this year.) The Carlos Avery site is a patchwork of stabilized dunes with small blowouts, moderate sized open areas, pin/bur oak savanna, wetland, dense oak forest, and way too many thickets of alien alder-buckthorn (*Rhamnus frangula*), all on a fine, sandy soil.

We found pasque-flower leaves and seedheads; however, there appeared to have been very few blooms this year compared to my visit in 1992 or 1993. Carolina puccoon was very much in evidence, though not at peak bloom. We saw one patch of hoary puccoon in bloom, and found false heather (*Hudsonia tomentosa*—a first for me) in bloom, which we'd like to add to our home landscape if we can find a source.

Other blooms included Canada mayflower, star-flowered false solomon's seal, prairie or birdfoot violet, and blue-eyed grass. It looks to be worth a return visit, as there are also aster, goldenrod, blazing star, dogbane, coreopsis, prairie larkspur, spiderwort, lead plant, and downy prairie clover. Also on the notable species list: earthstar puffball, pincushion moss, British soldier, ground cedar clubmoss, jack pine, porcupine grass, sand dropseed, junegrass, little bluestem, Indian grass, switchgrass, and at least 3 sedges that look like they belong there.

The area could use a series of prescribed burns to set back the buckthorn and the bluegrass. That's probably true of most of the Anoka Sandplain. Lloyd Knudson, the manager of Carlos Avery, is interested in doing burns in areas with good, fire-tolerant native plants.

Botanist needed for state trail survey

A botanist or ecologist is wanted by the Department of Natural Resources, Trails and Waterways, to survey natural plant communities along state trails. The trails in question are the Luce Line State Trail from Plymouth to Cosmos; the Sakatah Singing Hill State Trail between Faribault and Mankato; and the Glacial Lakes State Trail between Willmar and Richmond. If interested contact Angela Anderson at angela.anderson@dnr.state.mn.us.

Plant news from science press

Flower show in desert due to El Niño and hurricane

The most dazzling display of wildflowers in this century was seen on the southwest desert according to botanist Mark Dimmitt of Tucson, and is attributed to the combined effects of El Niño and a hurricane that brought much rain. (*Science* 280: 2048-2049, 1998)

Biodiversity extensive at Bluestem Prairie Preserve

This 2,758-acre preserve in Minnesota is a "mosaic of wet, mesic and dry prairies and calcareous fens" that harbors more than 50 species of grasses, 70 types of birds, 20 species of butterflies, 21 mammals, and more than 250 species of wildflowers according to Camille LeFevre. (*Nature Conservancy*, July-August, 1998)

Missouri bladderpod on endangered species list

Missouri bladderpod (*Lesquerella filiformis*), a member of the mustard family, is a winter annual. It sets seed and dies before the hot, dry days of summer. It has been found in 4 counties of Missouri and 2 locations in Arkansas. It was put on the list in 1987. Grasses and trees now threaten its survival. (*National Parks* 72[3-4]:48, 1998)

Lichens used to date earthquakes

Lichens are more accurate than radiocarbon dating according to Mark Brandon of Yale University and Bill Bull of the University of Arizona. Lichens quickly colonize fresh rock surfaces and grow at known rates: lichens grow about three eighths of an inch every century. Lichens can pin down dates within a decade, whereas radiocarbon dating can be off 40 years either way. Earthquakes can be predicted. (*Earth* 7[4]: 12, 1998)

Red maple dominant in eastern forests

Red maple (*Acer rubrum*) has become more dominant in forests during the 20th century according to Marc Abrams of Pennsylvania State University. It now dominates the understory of and mid-canopy of many oak, pine, and northern hardwood forests and is likely to increase in the next century. Before European settlement, red maple was a relatively minor component in eastern United States. Reasons for this are not clear but lack of fire and increase in deer and gypsy moth populations that affect other trees are factors. Prescribed burning appears to be the most effective ecosystem management approach to keep red maple populations in check. (*BioScience* 48: 355-364, 1998)

World's plants threatened with extinction

The World Conservation Union Red List of Threatened Plants shows that 34,000 (12.5%) of the world's plant species are threatened. In the United States, 16,000 (29%) of the nation's plant species are threatened. "The reasons for the rapid loss of plant life vary, but we know that the loss of habitat and the introduction of alien, or non-native plant species, are the two main factors" reports John C. Sawhill, CEO of *Nature Conservancy*. (*Native Plants* [Maryland] 6[2]:6, 1998)

Only 3 plant species in world known to produce colored nectar

Only 3 plant species, all growing in Mauritius— island in the Indian Ocean—produce colored nectar. One produces red and two scarlet nectar. Birds pollinate all 3 species but the nectar color is not thought to be the attractant. Reasons for color are not known. (*Science News* 153[25]:399, 1998)

Grazing by bison enhances biodiversity in prairies

In ecosystems like grasslands, diversity in native vegetation can be retained under conditions that would otherwise lead to a decline in species richness by adding or maintaining forces such as grazing by bison report Scott L. Collins and associates at the National Science Foundation, Arlington, Virginia; Kansas State University, Manhattan; and the University of Oklahoma, Norman. Loss of species diversity due to frequent burning was reversed by bison grazing. Results are based on a 10-year study in Kansas. (*Science* 280: 745-747, 1998)

Sphagnum comprises 28 species in Minnesota

Peat-forming wetlands, called peatlands, are most abundant in boreal regions, including northern Minnesota, according to Ethan Perry. This moss appeared on a large scale in Minnesota about 4500 years ago. North of Red Lake, a peatland stretches 45 miles by 13 miles in area. Peatlands are either fens or bogs. (*Nature Conservancy, Minnesota Chapter News*, Spring-Summer, 1998)

Yucca and the yucca moth

Yucca, a member of the agave family, is useful for fiber and a soap-producing agent reports George Ellison. It is entirely dependent on a nocturnal yucca moth for pollination. The female moth gathers pollen grains and rolls them into a small ball. Then the moth flies with the ball and deposits her eggs inside the plant ovary and packs the pollen ball into a cup at the other end of the pistil. The developing larvae eat some, but not all, yucca seeds, hibernate in cocoons, and emerge when yucca is in flower. Without these moths yucca has to be hand-pollinated. (*Chinquapin* 6[2]: 13, 1998)

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